NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

PASTURE AND HAYLAND PLANTING

(Acres)

CODE 512

DEFINITION

Establishing and re-establishing long-term stands of adapted species of perennial, biennial, or reseeding forage plants. (Includes Pasture and Hayland Renovation. Does not include Grassed Waterway or Outlet on Cropland.)

PURPOSE

To reduce erosion, to produce high quality forage and to adjust land use.

CONDITIONS WHERE PRACTICE APPLIES

On existing pasture and hayland or on land that is converted from other uses.

Planning Considerations

1. The planned use of the forage and the objectives of the land user and soil conditions should be considered in selecting the forage species.

2. Weed control and grazing management are especially important in obtaining and maintaining a stand.

3. With conventional plantings lime should be spread and incorporated within the plow zone six (6) months prior to forage seedings.

4. With no-till seedings, lime, phosphate and potash should be applied at least six (6) months and preferably a year or more prior to forage seeding, especially where large pH corrections are necessary.

5. Avoid reseeding alfalfa directly back into an old alfalfa sod. Alfalfa has an allelopathic or phytotoxic effect on itself and seeding failures are common unless the field is rotated one year to a row crop or small grain.

SPECIFICATIONS

I. Site Preparation

Remove obstructions such as stumps, shrubs, stones and other debris that may interfere with seedbed preparation, seeding and management of pasture or hayland.

II. Lime and Fertilizer

Correct or maintain a soil pH of 6.0 to 6.5 for grasses or 6.5 to 7.0 for legumes or grass-legume mixtures.

Pasture and Hayland Seedings

For pasture and hayland raise soil test levels of phosphorus to at least 60 (Bray P^1) and exchangeable potassium to at least 260 plus 5 times the cation exchange capacity (CEC) of the soil. If soil test levels are below 90 for phosphorus and 400 for potassium, an additional 40 pounds of phosphate (P_2O_5) and 40 pounds of potash (K_2O) will be applied as a starter. No additional phosphorus or potassium should be applied if tests are above these levels. In addition, apply 10 pounds of nitrogen on legumes, 20 pounds on grass-legume mixtures and 30 pounds of nitrogen on legumes, 20 pounds on grass-legume mixtures and 30 pounds on cool season grasses or grass-ladino clover mixtures at seeding time. Use no nitrogen at seeding time on warm season grasses.

CRP Seedings

Apply build-up fertilizer to raise the soil test levels to at least a Bray Pl of 30 and exchangeable potassium of at least 220. Also, apply 20 pounds of nitrogen on grass-legume mixtures and 30 pounds on cool season grasses. Apply no nitrogen on warm season grasses. If soil tests are in the range of a Bray Pl of 26 to 89 and an exchangeable potassium of 204 to 399, apply 40 pounds of phosphate (P_2O_5) and 40 pounds of potash (K_2O) per acre in addition to the nitrogen. No additional fertilizer is required when build-up fertility is being applied, or when soil tests exceed 90 pounds of phosphorus and 400 pounds of potassium.

On the average, it requires 10 lbs./acre of (P_2O_5) fertilizer to raise the Pl soil test value one unit. Similarly, it requires 2.5 lbs./acre of (K_2O) fertilizer to raise the K soil test value one unit.

III. See Section II-K for site adaptation of speciies and Pasture and Hayland Suitability Group (P&HSG). Select a suitable seed mixture and rate from the enclosed seeding chart.

IV. Seeding Dates

Seedings must be strong enough to survive a stress period which may occur following seeding. Avoid the hot, dry stress conditions of late June and July or the hard freezes of mid to late fall by seeding during the following seeding periods:

		Northern Ohio	Southern Ohio
Legumes & Cool Season Grasses 1/	Frost Seedings	Late Winter to Mar. 15	Late Winter to March 1
	Spring	April 1 to May 10	Mar. 15 to April 30
	Late Summer	Aug. 1 to Aug. 30	Aug. 1 to Sept. 15
Warm Season Grasses	Late Spring	April 15 to June 1	April 1 to June 1
	Dormant	Nov. 15 to Early Spring	Nov. 30 to Early Spring

1/ When Timothy is included in a mixture to be seeded in fall seeded small grains, the Timothy should be seeded at the time the grain is seeded. The other grasses and legumes should be seeded in early spring.

V. Seed Quality

All seed will be of good quality and comply with State seed laws.

Legumes shall be inoculated before seeding with the specific type of inoculant for the species. If the seed was preinoculated more than sixty (60) days prior to seeding, it shall be reinoculated.

VI. Seedbed Preparation and Seeding

A. Complete Renovation

1. Where the potential for erosion is not a concern, the seedbed may be prepared by moldboard plowing secondary tillage to make a firm seedbed.

2. Where erosion is a concern; a) Prepare the seedbed with a disk or chisel plow that leaves existing vegetation on the soil surface as a mulch. Begin tillage operations far enough in advance to completely kill the vegetation. b) Kill existing vegetation with herbicides as labeled and make a no-till seeding.

3. Seedbed preparation and seeding operations will be done on the contour or across the general slope on fields with 5 percent or steeper slopes.

4. Place seed ¼ to ½ inch deep by using a grassland drill, grain drill with press wheels, cultipacker seeder, or by broadcasting and cultipacking or light harrowing before and after seeding.

5. For no-till seedings, graze or mow exisitng vegetation closely. Apply herbicides to kill or suppress existing vegetation and cntrol weeds. Apply 2 4-D 10 to 14 days prior to applying contact herbicides. Apply all herbicides in the manner and at the rates recommended on the label and in the Ohio Agronomy Guide.

6. When seeding a small grain companion crop, the seeding rates should be no more than one (1) bushel of spring oats or 20 pounds of wheat or cereal type per acre. Companion crops will be grazed or mowed in the dough or early head stage or harvested early for grain. Mow stubble low and remove it immediately after grain harvest.

7. Companion crops will not be used for spring seeded warm season grasses. Atrazine used according to label recommendations may be applied to Switchgrass and Big Bluestem to control competing weeds. Atrazine application should be delayed at least 48 hours after seeding switchgrass to avoid killing the seed prior to germination. Atrazine application may be delayed up to emergence on Big Bluestem. Heavy grass infested fields should be avoided when planting warm season grasses.

VII. Seedbed Preparation and Seeding (Cont.)

8. Dormant seedings of warm season grasses may be made into crop residues or grown mulch. The warm season grasses should be drilled through the ground cover when the soil temperature is 40^{o}F or less and before freezing. Normally, this period would be from November 15 through December 30.

   Procedures for Various Ground Covers:

   a. Crop Residue – Drill grasses into evenly distributed soybean or small grain residues. Shred and evenly distribute corn and other residues over the surface and drill.

   b. Grown Mulch – Prepare a clean seedbed and seed two (2) bushels of spring oats and 20-30 pounds of wheat or cereal rye per acre during August to mid-September. Broadcast or drill the warm season grass into the standing cover crop in late November through December. The oats will winterkill and provide mulch. Mow the wheat or rye in the early head stage to prevent competition.

9. Do not graze warm season grasses the seeding year. Mow only to control weeds and mow above seedling height.

B. Incorporating or Re-establishing Legumes into Existing Grass Stands

1. Graze or mow fields closely to weaken stand.

2. Use a disk, field cultivator, or similar tool to disturb or destroy 50 to 60 percent of existing stand in late fall, early winter, or spring.

3. When tillage is done in fall or winter, broadcast seed in late Febryary or early March.

4. When srping seeding is done, plant seed ¼ to ½ inch deep by using a grain drill with press wheels, cultipacker seeder, or by broadcasting and harrowing or cultipacking after seeding.

5. No-till seeding may be done within late summer or spring seeding dates with the use of appropriate herbicides as labeled.

6. Species and rates – use one of the following species and rates of seeding when incorporating legumes into an existing grass stand. Refer to the Ohio Agronomy Guide for adapted varieties of these legumes.

Alfalfa	8 pounds per acre
Alfalfa Red Clover	5 pounds per acre 3 pounds per acre
Birdsfoot Trefoil	4 pounds per acre
Red Clover	6 pounds per acre
Ladino Clover	½ pound per acre

7. When grass is 6-8 inches tall in the spring, graze or clip to reduce the competition with the legumes. If grazing is used, remove livestock when they begin grazing the legumes.

VII. Cover Management for Stand Maintenance and Wildlife Benefits on CRP Land

1. Mowing.

a. Mowing may be done to control weeds anytime during the seedling year. Mow high to prevent damage to the permanent seedings. Warm season grasses should not be mowed closer than six inches.

b. After the seedling year, spot mowing or spot chemical treatment to control noxious weeds should be done rather than mowing the entire field.

c. Annual mowing should be discouraged, since it greatly reduces residual cover for next year's nesting. Periodic mowing (once every 3-5 years) will be beneficial since it will hep prevent a "sod-bound" condition which is detrimental to the stand as well as to wildlife nesting value and will control woody vegetation.

d. Any planned mowing after the seedling year shall be done after August 1, to protect nesting birds.

SITE ADAPTATION

Seeding Mixtures	Rate Lbs./Acre	Pasture	Hay	CRP	Well Drained Low-Medium Productivity Nearly Level To Steep, Stony or Steep & Very Steep Slopes P&H Suit. Group – A3, A4, B2, E2, F2, F4, F6 G2	Well Drained High Productivity P&H Suit. Group - A1, A2, G1	Well and Moderately Well Drained Low-Medium Productivity Nearly Level to Moderately Steep P&H Suit. Group – B1, B4 E1, E3,	I
Alfalfa	12-15		X			X	X	
Alfalfa &	10							
Timothy or	2 - 4	X	X	X		X	X	
Smooth Bromegrass	6							
Or Orchardgrass	4							
Or Garrison Grass	4							
Alfalfa &	7							
Red Clover	3							
& Timothy or	2 – 4	X	X	X		X	X	
Smooth Bromegrass	6							
Or Orchardgrass	4							
Or Garrison Grass	4							
Red Clover &	6							
Alsike or	2							
Ladino Clover	¼							
& Timothy or	2 – 4	X	X	X		X	X	
Smooth Bromegrass	6							
Or Orchardgrass	4							
Or Garrison Grass	4							

SITE ADAPTATION

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Birdsfoot Trefoil 1/ & Timothy or Orchardgrass	6 4 4	X	X	X		X	X	
Orchardgrass	6 – 8	X		X	X	X	X	
Garrison Grass	4 – 5	X	X	X	X	X	X	
Orchardgrass & Ladino Clover	6 – 8 ½ - 1	X		X		X	X	
Garrison Grass or Tall Fescue 2/ & Ladino Clover	4 – 5 10-15 ½ - 1	X X	X	X	X	X X	X X	
Birdsfoot Trefoil 1/ & Kentucky Bluegrass	6 2	X		X		X	X	
Reed Canarygrass & Ladino Clover	10 ½ - 1	X		X		X	X	
Korean Lespedeza 2/ & Tall Fescue	8 8	X			X			

1/ These mixtures primarily adapted to northern Ohio.
2/ Use only endophyte free Tall Fescue varieties such as Falcon, Fawn, Forager, Johnstone and Kenhy.

SITE ADAPTATION

Seeding Mixtures	Rate Lbs./Acre	Pasture	Hay	CRP	Well Drained Low-Medium Productivity Nearly Level To Steep, Stony or Steep & Very Steep Slopes P&H Suit. Group – A3, A4, B2, E2, F2, F4, F6, G2	Well Drained High Productivity P&H Suit. Group - A1, A2, G1	Well and Moderately Well Drained Low-Medium Productivity Nearly Level to Moderately Steep P&H Suit. Group – B1, B4 E1, E3,	I
Switchgrass	6 (PLS)	X		X		X	X	
Indiangrass	10 (PLS)	X		X	X	X	X	
Big Bluestem	10 (PLS)	X		X	X	X	X	
White or Yellow Sweet Clover & Ladino Clover & Timothy & Smooth Bromegrass Or Orchardgrass	10 ½ 2 – 4 6 4			X	X	X	X	

Conservation practice standards are reviewed periodically, and updated as needed. To obtain the current version of this standard, contact the Natu Service office or web site (www.oh.nrcs.usda.gov).

FERTILIZER RECOMMENDATIONS FOR CP-1, 2 AND 4 SEEDINGS

NITROGEN

TYPE OF SEEDING	POUNDS OF N TO APPLY
Grasses Only	30
Grasses and Legumes	20
Legumes Only	0
Warm Season Grasses	0

PHOSPHORUS

SOIL TEST BRAY P1	APPLY POUNDS P_2O_5	SOIL TEST BRAY P1	APPLY POUNDS P_2O_5
2	280	16	140
4	260	18	120
6	240	20	100
8	220	22	80
10	200	24	60
12	180	26-89	40
14	160	90+	0

10 pounds of P_2O_5 is required to raise the Pl test 1 pound

POTASSIUM

SOIL TEST K TEST	APPLY POUNDS K_2O	SOIL TEST K TEST	APPLY POUNDS K_2O
0	550	120	250
10	525	130	225
20	500	140	200
30	475	150	175
40	450	160	150
50	425	170	125
60	400	180	100
70	375	190	75
80	350	200	50
90	325	204-399	40
100	300	400+	0
110	275		

2.5 pounds of K_2O is required to raise the K test 1 pound.

LIMESTONE

Apply lime to raise soil pH to 6.0 to 6.5 for grasses and 6.5 to 7.0 for grass-legume mixtures or legumes according to a current soil test by an approved lab.

USING SOIL TEST PRINTOUTS TO DETERMINE FERTILIZER RECOMMENDATIONS FOR CRP SEEDINGS

The following example shows the soil test printout information that is used to determine fertilizer recommendations for CRP seedings. Use this data and the tables on the reverse side of this form to determine the amounts of P_2O_5 and K_2O to apply.

1. This number is the Bray P1 soil test value. Find this number in the phosphorus fertilizer. (Bray Pl = 4 – apply 260 pounds of P_2O_5.)

2. This number is the soil test K value. Find this number in the potassium table and apply the corresponding amount of potash fertilizer. (K test = 240 – apply 40 pounds of K_2O fertilizer.)

3. Apply the amount of lime recommended here. (Crop specified should be a forage seeding.)

REFERENCES

1. Ohio Agronomy Guide (current issue), CES Bulletin 472.

2. Current information, Technical Guide Reference File: Agronomy, Forage Crops, Meadow Seedings and Pastures.